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10/533,996	12/12/2005	Harald Schmidt	16096.11	2594
22913	7590	06/05/2009	EXAMINER	
Workman Nydegger 1000 Eagle Gate Tower 60 East South Temple Salt Lake City, UT 84111			LEE, DANIEL H.	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/533,996	<b>Applicant(s)</b> SCHMIDT, HARALD	
	<b>Examiner</b> DANIEL LEE	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☒ Claim(s) 7 and 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. The Amendment filed on May 1, 2009 has been entered. Claims 1-20 are now pending in the application as claims 13-20 are newly entered.

### **Response to Arguments**

2. The previous objections to claims 7 and 8 are withdrawn in light of Applicant's amendment correcting typographical errors.

3. The previous rejection of claims 1-12 under 35 U.S.C. 103(a) as being unpatentable over Loercks in view of Koster and Figlar has been withdrawn.

4. Applicant's arguments have been fully considered but are moot in view of the new grounds of rejection.

### **Claim Objections**

5. Claims 7 and 12 objected to because of the following informalities: In claim 7, Examiner suggests deleting "(7)" in element (e) for uniformity. In claim 12, "poly hydroxyl butyric acid" should be "poly hydroxy butyric acid." Appropriate correction is required.

### **Claim Rejections - 35 USC § 112**

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**2. Claims 1-2 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

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3. Regarding claim 2, the use of “preferably” renders the claim unclear as to whether or not the claim is further limiting the range of claim 1.

**Claim Rejections - 35 USC § 103**

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. **Claims 1-20 rejected under 35 U.S.C. 103(a) as being unpatentable over Figlar et al. (“Figlar”, US 6779529) in view of Loercks et al. (“Loercks”, US 6062228) and Zhuang et al. (“Zhuang”, US 6814786).**

9. Regarding claim 1, Figlar teaches the filtering material is arranged in alternatingly succeeding layers (see Figs. 2-4) comprised of any filter plug known in the art and activated carbon and the layers are stacked transversely with respect to the direction of gas flow (see col. 1, line 66 to col. 2 line 12; filter plug can be any filter plug known in the art... activated charcoal). Starch and/starch based polymer mixtures are known in the art as filtering materials as taught by Loercks (see abstract; starch or its polymer

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compositions). Figlar is silent as to the filter channels being open in the direction of gas flow and having a diameter in the range of about 50  $\mu$  m to about 100  $\mu$  m. Zhuang teaches that the maximum preferable cross-sectional dimension of the flow channels is from about 0.1 mm to about 2 mm, which encompasses the upper limit claimed (col. 8, lines 37-40; maximum... preferably from 0.1 mm [0.1mm = 100  $\mu$  m]). Zhuang also teaches the filter channels are open in the direction of gas flow (col. 5, lines 50-52; flow channels can be parallel to the axial direction). It would have been obvious to one of ordinary skill in the art to include the filter channels of Zhuang as flow channels increase the total surface area for sorption of gas-phase constituents (see Zhuang, col. 8, lines 43-46).

10. Regarding claim 2, Zhuang teaches the filtering material comprising continuous filter channels (see Fig. 1) extending substantially in the direction of the gas flow, wherein the diameter of the filter channels preferably lies in the range of 50  $\mu$  m to 100  $\mu$  m (col. 8, lines 37-40 [as discussed above]).

11. Regarding claim 3, Figlar teaches a filter plug forms a base material for the activated carbon (see Fig. 2-4). As discussed above, starch and/or starch-based polymer mixtures are known in the art as filtering materials. The filter plug is stacked with the general adsorbent material [which Figlar provides for an example, activated charcoal] forming a base material (see col. 2, lines 5-12).

12. Regarding claim 4, Loercks teaches the starch and/or starch-based polymer mixture is a foamed material or a fibrous material (see abstract; fibers, films, or foams prepared... starch or its polymer compositions).

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13. Regarding claim 5, Figlar teaches the activated carbon is an activated-carbon powder (see Figlar, claim 1, (b); high surface area... activated coal-based carbon).

Loercks teaches the foamed material or the fibrous material. As Figlar teaches the use of any filter plug known in the art, it would have been obvious to use a foamed or fibrous material as a base material for the activated carbon as foamed or fibrous material is a known filtering material in the art as taught by Loercks. Also, it is known in the art that activated carbon can be in granular or powdered form. As for example, see Xue et al. (US 2003/0200973), (para. [0004]; commercially available adsorbing materials are in granular or powder forms).

14. Regarding claim 6, Figlar teaches the filter plug can be made from a variety of materials or a combination of materials including cellulose and cotton fibers (see col. 3, lines 22-35; fibrous material... cellulose... cotton... combinations thereof). The MPEP states: where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (see MPEP 2144.05). Therefore, it would have been obvious to one of ordinary skill in the art, through routine experimentation, to include the natural fibers in the amount of about 5%. See also *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

15. Regarding claims 7 and 8, Loercks teaches a method for manufacturing a filter element comprising the steps of: (a) continuously supplying a metered mixture of starch and/or a starch-based polymer mixture as well as further additives into an extruder system, (b) heating and kneading the mixture at a defined temperature and pressure regime for forming a melt, (c) extruding the melt through a nozzle, (d) forming an

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extruded product having an air-permeable configuration, (e) compressing the extruded product and forming a filtering material as an endless filter, (f) separating the extruded filtering material into portions, and (g) forming a filter element comprised of at least one filtering material portion (see claim 1).

16. Further regarding claim 8, Loercks is silent as to element (g). Figlar teaches a filter element consisting of two or more filtering material portions and each comprising an activated carbon layer between subsequent filtering material portions (see Fig. 4). It would have been obvious to one of ordinary skill in the art to use the method of Loercks to manufacture the filter element as it would predictably be an effective method to make the filter element.

17. Regarding claim 9, one of ordinary skill in the art would appreciate that filter channels are introduced into the filtering material portions before forming the filter element as it would be less efficient to introduce filter channels into the filtering material portions after forming the filter element. As for example, Koster (US 4291712) teaches filter rods exposed to laser beams prior to being cut to filters (col. 1, lines 57-60).

18. Regarding claim 10, Zhuang teaches the filter channels are formed by laser beam (col. 11, lines 47-55; flow channels can be formed by a suitable process such as... laser machining). The motivation to include flow channels was discussed above. This teaching provides a suitable process for forming flow channels.

19. Regarding claim 11, Loercks teaches the filtering material is formed of starch foam, a biopolymeric film or a starch polymer film (see abstract; wherein fibers, films, or foams prepared in an extrusion method from biopolymers based on thermoplastic starch

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or its polymer compositions). As discussed above, Figlar teaches that any known filtering material can be used for the filter plug.

20. Regarding claim 12, Loercks discloses as admitted prior art that further additives are poly hydroxy butyric acid (PHB) (see col. 1, lines 35-38; preparation and use of biodegradable cigarette filters, which are prepared... polyhydroxy butyric acid (PHB)). It would have been obvious to one of ordinary skill in the art to include the biopolymer PHB in the preparation of a filter tow as it would predictably result in increased biodegradability (see Loercks, col. 2, lines 12-17).

21. Regarding claim 13, Figlar teaches the filtering material is arranged in alternately succeeding layers as discussed above in the rejection of claim 1. Also, Loercks teaches the filtering material contains starch and/or a starch-based polymer mixture as discussed above in the rejection of claim 1. Figlar and Loercks are silent as to the plurality of pores and/or filter channels aligned partly transversely relative to the direction of gas flow.

22. Zhuang teaches filter channels aligned partly transversely relative to the direction of gas flow through the filtering material (see col. 5, lines 50-58; the flow channels can be non-parallel to the axial direction). It would have been obvious to one of ordinary skill in the art to align the filter channels partly transversely as Zhuang teaches that increasing the tortuosity of fluid flow enhances the removal of gas-phase constituents from a gas stream (see col. 9, lines 1-4).

23. Regarding claim 14-16, Zhuang teaches the filter channels are generally aligned in the direction of gas flow (see Fig. 1) as discussed in the rejection of claim 1 above,



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extend all the way through the filtering material (see Fig. 1) as discussed in the rejection of claim 2 above, and have a diameter in a range of about 50  $\mu$  m to about 100  $\mu$  m as discussed in the rejection of claim 1 above.

24. Regarding claim 17, Figlar teaches the filtering material is arranged in alternatingly succeeding layers as discussed above in the rejection of claim 1. Figlar teaches the Also, Loercks teaches the filtering material contains starch and/or a starch-based polymer mixture as discussed above in the rejection of claim 1. Further, Zhuang teaches the filter channels extending through the filtering material as discussed above in the rejection of claim 1.

25. Further regarding claim 17 and regarding claim 20, Figlar teaches the natural cellulose fibers including cotton as discussed above in the rejection of claim 6. The limitation of the inclusion of 5% natural fibers is also discussed above.

26. Regarding claim 18, Zhuang teaches the filter channels are generally aligned in the direction of gas flow (see Fig. 1) as discussed above in the rejection of claim 1.

27. Regarding claim 19, Zhuang teaches the filter channels have a diameter in a range of about 50  $\mu$  m to about 100  $\mu$  m as discussed above in the rejection of claim 1.

### **Correspondence**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL LEE whose telephone number is (571)270-7711. The examiner can normally be reached on Monday-Thursday, 7:30-5:00, alternate Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571)272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. L./  
Examiner, Art Unit 1791

/Joseph S. Del Sole/  
Supervisory Patent Examiner, Art Unit 1791